



DIGIPEN

APPLIED COMPUTER GRAPHICS SCHOOL

DigiPen Applied Computer Graphics School Student Handbook

1997-1998

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***DigiPen Applied Computer Graphics School reserves the right to make changes to the curriculum without any prior notice.**

DigiPen Applied Computer Graphics School Student Handbook

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Introduction to DigiPen Applied Computer Graphics School

Name of the School:

DigiPen Applied Computer Graphics School

Address:

5th Floor, 530 Hornby Street, Vancouver, BC, Canada V6C 2E7

Phone and Facsimile Numbers:

Tel: (604) 682-0300 Fax: (604) 682-0310

E-mail Address:

e-mail: digipen@digipen.com

World Wide Web Home Page:

<http://www.digipen.com/>

Institutional Objectives:

While the uses for computers continue to grow, two of the most exciting areas evolving are 3D computer graphic imagery and computer/video game production. Realizing the demand for highly trained and qualified specialists to produce such work for the expanding industries, DigiPen Applied Computer Graphics School has developed and offers 2-year intensive training programs in each of these fields. Imagine creating and traveling through buildings which do not exist, seeing the atomic structure of complex molecules, or creating creatures from another world. Whether it is for engineering, interior design, industrial design, entertainment, medical imaging, architecture, education, or special effects for film, computer graphics offers an entirely new medium to present information. If you prefer to learn the complete process of how to produce video and computer games, from programming the codes to the design of the characters and storyboards, our school's intensive Game Programming course offers students the unique chance to do so.

Age Group:

Applicants must be 18 years and older.

Student Profile:

Applicants must be enthusiastic and creative with a will to learn the complex worlds of computer and video game programming and its relation to virtual reality.

Institution Prerequisites:

As each program has its respective prerequisites, please refer to the appropriate sections in this handbook for a detailed descriptions of the items required for admission consideration. However, all applicants must have:

- completed Grade 12
- passed the screening of our advisory committee

Advisory Committee:

The final decision in the enrollment of an applicant in the course is made by the advisory committee. The committee decides on the eligibility of each student based on certain criteria, mainly:

- The prerequisites required by the respective programs
- Reference letters from teachers and supervisors
- Grade transcripts of the last three years
- Applicable work experience

Registration & Entrance Date Information:

The entrance date for the two programs is September of each year. Applications for these programs must be received by DigiPen before April 30th of the year the applicant is applying for.

To ensure a high teacher to student ratio, the maximum number of students that will be accepted each year in "The Art and Science of 2D and 3D Video Game Programming" course and in "The Art and Science of 3D Computer Animation" course will be strictly limited.

The following must be received by the Registrar's office for evaluation:

- A completed application form
- Grade transcripts for the past three (3) years
- At least two (2) reference letters from teachers and/or supervisors
- Non-refundable application fee of **\$50.00** in Canadian funds or **\$40.00** in U.S. funds.

Applicants applying for the The Art & Science of 3D Computer Animation must also submit a comprehensive portfolio that demonstrates the applicant's artistic ability. Please note that any portfolio submitted to DigiPen becomes the exclusive property of DigiPen and DigiPen shall be under no obligation whatsoever to return the portfolio to the applicant. Therefore, please do NOT send in original art works.

Acceptance into the program is determined by the Advisory Committee, which judges the eligibility of each applicant on certain criteria including:

- All registration material submitted
- The quality of the applicant's art portfolio
- An interview with a member of the Advisory Committee to determine the commitment of the applicant
- The result of an entrance exam where applicable, will be administered to determine proficiency in the English language and basic computer skills

Upon acceptance into the program, students must submit a non-refundable registration fee of **\$100.00** in Canadian funds or **\$75.00** in U.S. funds.

Course Scheduling & Hours of Operation:

All of the compulsory courses are taught between the hours of 9:00 a.m. and 7:00 p.m., Monday to Friday. Students wishing to access the facility to produce their work may do so during the regular school year between the hours of 9:00 a.m. and 7:00 p.m., Monday to Friday, as well as 10:00 a.m. to 4:00 p.m. on Saturdays.

Students will have holidays for two (2) weeks over Christmas and a four (4) week summer break during the month of August. In addition, DigiPen is closed on all Canadian statutory holidays.

DigiPen reserves the right to restrict access to the production facility during occasional system maintenance days.

Graduation Requirements:

In order to graduate from DigiPen's programs, students must achieve a combined average of over 50% on the following:

- Successful completion of all compulsory courses
- Successful completion of all projects and assignments

Students must also maintain a minimum of 70% attendance record in each program.

Performance and professionalism are expected to be maintained at all times. This includes:

- A minimal attendance of 70% for all classes, exams, group and tutor meetings.
- Completion of all projects and assignments.
- Maintaining professional behavior within the school at all times.
- Following the technical protocol of the facility.

Failure to maintain this standard at any given time may result in a complete review of a student's performance within the program. This review may result in the suspension or expulsion of the student.

DigiPen will issue one of three diplomas to graduates:

- Graduates who achieve between 50% to 69% will be issued a Diploma in Video Game Programming or 3D Computer Graphics and Animation with Completion.
- Graduates who achieve between 70% to 85% will be issued a Diploma in Video Game Programming or 3D Computer Graphics and Animation with Distinction.
- Graduates who achieve between 86% to 100% will be issued a Diploma in Video Game Programming or 3D Computer Graphics and Animation with Excellence.

In addition to a diploma, graduates of the 3D Computer Graphics and Animation course will receive a copy of all of their completed animations on one (1) Betacam videotape and one (1) VHS tape.

**The Art and Science of 2D and 3D Video Game Programming,
A Super Nintendo Entertainment System®
Game Programming Course**

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Trade Marks:

- Super Nintendo Entertainment System and Super NES are trademarks of Nintendo of America Inc.

Section G1

General Overview:

Program Name:

The Art and Science of 2D and 3D Video Game Programming, A Super Nintendo Entertainment System® Game Programming Course

Program Objectives:

To offer a unique and complete program teaching the art and science of game programming. There is no educational program available in the area to train students in this subject. DigiPen trains students in a logical and sequential method incorporating its unique experience in computer science coupled with computer animation. DigiPen offers the program with the cooperation of Nintendo of America Inc., whose expertise and success in the field of video games is also of great benefit to the students. We believe that the cooperation between Nintendo and DigiPen makes DigiPen's graduates more employable on both national and international levels.

Prerequisites:

In addition to the prerequisites set out by the institution, applicants to the video game programming course must have at least a B average in their grades 10, 11 and 12 mathematics courses. Problem-solving skills are essential in developing computer/video games. Applicants are encouraged to upgrade their mathematical skills and refresh their mathematical concepts prior to enrollment into this program.

Entrance Examination:

This exam is given to ensure that the applicant has the proper background to pursue the computer studies offered during the program. It also checks the math level the applicant has prior to joining the course. Although it is possible for a student to follow other computer courses with little or no knowledge in math, this is not the case when dealing with computer graphics. The main areas to be tested are:

- Proficiency in the English language (For Non-Native English speakers)
- Mathematics level
- Idea/s of game storyboard/s

Applicants who have a B average in their grades 10, 11 and 12 mathematics courses may be exempt from the entrance examination.

Length of Program:

The program is two full years (summers included), making it an intensive program.

Tuition:*The first year (Semester 1, Semester 2):*

For students from Canada and NAFTA countries (U.S.A., Mexico):
\$9,500.00* in Canadian funds or the equivalent in U.S. funds (tax is not included).

For students from other countries:
\$9,500.00* in U.S. funds (tax is not included).

The second year (Semester 3, Semester 4):

For students from Canada and NAFTA countries (U.S.A., Mexico):
\$9,500.00* in Canadian funds or the equivalent in U.S. funds (tax is not included).

For students from other countries:
\$9,500.00* in U.S. funds (tax is not included).

* The tuition fee is applied toward the semesters only, and there is no charge for the summer workshops. These tuition fees may be changed after printing date. Please call the school for any updates on the tuition.

Student Assistance

Canadian students enrolled in this program may apply for a Canada Student Loan through their home province.

Scholarship:

As an incentive for students to excel within the program, DigiPen will be offering a President's Scholarship to a student who excels in the first year of the program. The scholarship will cover the student's cost of tuition for the second year. The selection of the student is determined by the Advisory Committee based primarily upon the professionalism and quality of the student's work.

Summary of the Program:

In brief, the program is a condensed course in computer programming in general, and game programming in particular. It is suitable as a stepping stone towards other studies or as an end in itself. The program features a large amount of theory but is also kept very practical. The uniqueness of the program resides in the fact that it combines science (computer science) and art (game writing, storyboarding, computer generated imagery and animation) in the same program. This condensed program offers excellent training in a relatively short period of time. This allows the students who are interested in joining the work force as soon as possible to do so. Since the end product is well-defined (game programming), the program's course contents are well-focused and deal with the subjects promptly. The aim of the program is to produce experts in this field, therefore, no time is spent in dealing with "fill in" subjects. Finally, DigiPen's aim is to provide top quality education in the field of computer and video game programming which is locally and internationally recognized. With the cooperation of Nintendo in the program and DigiPen's serious determination and experience in the field of computer graphics, we are sure to succeed in reaching this goal.

The First Year:

The first year is the Foundation Year. It is divided into two semesters and a summer workshop:

- Semester I: Foundation
- Semester II: High Level Programming
- Summer Workshop I: Practical High Level
Programming Workshop

The Second Year:

The second year is the Production Year. It is divided into two semesters and a summer workshop:

- Semester III: Low Level Programming
- Semester IV: Implementation of a Game on the
Super NES
- Summer Workshop II: Overload of Semester IV

Section G2
Detailed Program and Course Outline:
(alphabetical listing)

Course Title: ***ALGORITHM ANALYSIS***

Code: *AA*

Type: *Computer Science, Theory, Compulsory*

Semester: *2*

Hours: *60*

Description:

The objective of this course is to describe and analyze algorithms on basic data structures such as arrays, stacks, queues, rings, binary trees, and linked lists. Particular emphasis is placed on studying the correctness and efficiency of these algorithms.

Course Title: ***THE COMPUTER ENVIRONMENT***

Code: *CE*

Type: *Computer Science, Theory, Compulsory*

Semester: *1*

Hours: *60*

Description:

The objective of this course is to provide a comprehensive and detailed description of the architecture and organization of a computer system. In addition, the concepts of Software Engineering are introduced. This course provides a foundation for the following courses:

- High Level Programming Level 1 (HLP1)
- High Level Programming Level 2 (HLP2)
- High Level Programming Level 3 (HLP3)
- Low Level Programming Level 1 (LLP1)
- Low Level Programming Level 2 (LLP2)

Course Title: ***ELEMENTS OF COMPUTER MATHEMATICS***

Code: ***ECM***
 Type: ***Math, Theory, Compulsory***
 Semester: ***1***
 Hours: ***60***

Description:

The objective of this course is to review and enhance the mathematical background of students. This course serves as a foundation for the following courses:

- Principles of Computer Graphics Level 1, (PCG1)
- Principles of Computer Graphics Level 2, (PCG2)

Course Title: ***HIGH LEVEL PROGRAMMING Level 1***

Code: ***HLP1-1 and HLP1-2***
 Type: ***Computer Science, Theory, Compulsory***
 Semester: ***1, 2***
 Hours: ***120***

Description:

The objective of this course is to cover in depth the C and C++ computer languages. This is a double length course, and serves as a solid foundation to levels 2 and 3. The C programming language is presented as a subset of C++, making this a double length course.

The course starts with an introduction to the compiler used during the course. Grammar for computer languages is explained using BNF notations and regular expressions. These two topics are followed by a thorough presentation of the C programming language and the C/C++ preprocessor. Object oriented programming paradigms precede the complete presentation of the C++ programming language. The course ends with the presentation of programming tips and techniques.

Course Title: ***HIGH LEVEL PROGRAMMING Level 2***

Code : ***HLP2***

Type: ***Computer Science, Theory, Compulsory***

Semester: ***2***

Hours: ***60***

Description:

During this second level of the course, the student learns about the major components that make up a video game. This course also puts into practice all the information and knowledge acquired in the previous level and the following courses:

- Principles of Computer Graphics (PCG1)
- Operating Systems (OS)
- Computer Environment (CE)

The student will be required to implement a small but complete game of commercial quality.

Course Title: ***HIGH LEVEL PROGRAMMING Level 3***

Code: ***HLP3***

Type: ***Computer Science, Theory, Compulsory***

Semester: ***3***

Hours: ***60***

Description:

During this third level of the course, the student studies the design and implementation of the various tools necessary for building video games. These tools are later used in the creation of the various elements of low level video games. This level also serves as a practical application of the knowledge acquired in the following courses:

- High Level Programming Level 1, (HLP1)
- High Level Programming Level 2, (HLP2)
- Principles of Computer Graphics Level 1, (PCG1)
- Principles of Computer Graphics Level 2, (PCG2)
- Storyboards and Game Concepts Level 1, (SCG1)
- Storyboards and Game Concepts Level 2, (SCG2)

Course Title: ***IMPLEMENTATION***

Code: ***IMP***

Type: ***Computer Science, Theory and Application, Compulsory***

Semester: ***4***

Hours: ***240***

Description:

This practical section combines all the theory acquired in the different classes. During this section, the student is guided to implement a complete video game that runs on the Super NES hardware. In fact, this is the second implementation of a complete game by the student. The first implementation of a complete game will have occurred during the High Level Programming Level 3.

Course Title: ***LOW LEVEL PROGRAMMING Level 1***

Code: ***LLP1***

Type: ***Computer Science, Theory, Compulsory***

Semester: ***2***

Hours: ***60***

Description:

This level is the first of three courses (Level 1, 2, Implementation) dedicated to assembly language programming. The objective of this section is to provide a rigorous introduction to assembly language programming. The Motorola 68000 family of processors has been chosen as a case study for this section.

Course Title: ***LOW LEVEL PROGRAMMING Level 2***

Code: ***LLP2***

Type: ***Computer Science, Theory, Compulsory***

Semester: ***3***

Hours: ***60***

Description:

Level 1 of this course introduced assembly programming language. The objective of this second level is to introduce the assembly language environment of the Super Nintendo Entertainment System Emulator. This course (Level 1, 2 and Implementation) combined with the High Level Programming courses (Levels 1, 2, 3) represent the core of the general instruction given during this program.

Course Title: ***OPERATING SYSTEMS***

Code: ***OS***

Type: ***Computer Science, Theory, Compulsory***

Semester: ***1***

Hours: ***60***

Description:

The objective of this course is to provide a detailed understanding of operating systems. Particular emphasis is placed on the Macintosh Operating System, the Macintosh System Managers and Toolbox routines. Message or Event driven programming techniques are also covered in this course.

Course Title: ***PRINCIPLES OF COMPUTER GRAPHICS Level 1***

Code: ***PCG1***
Type: ***Math, Theory, Compulsory***
Semester: ***2***
Hours: ***60***

Description:

This course is the first of two courses dedicated to the fundamentals of computer graphics. The objective of this course is to provide a rigorous presentation of the mathematical elements and algorithms involved in the generation and viewing of 2D and 3D graphic primitives.

Course Title: ***PRINCIPLES OF COMPUTER GRAPHICS Level 2***

Code: ***PCG2***
Type: ***Math, Theory, Compulsory***
Semester: ***3***
Hours: ***60***

Description:

Level 1 of this course is focused on the creation and viewing of 2D and 3D primitives. The objective of this second level is to study and analyze the mathematical elements and algorithms involved in three-dimensional computer graphics. Issues such as 3D object representations, hidden surface removal, photo realistic computer imagery and computer animation are covered.

Course Title: ***STORYBOARDS AND GAME CONCEPTS Level 1***

Code: ***SGC1***

Type: ***Game Construction, Theory, Compulsory***

Semester: ***1***

Hours: ***60***

Description:

This course teaches the students skills in developing and creating game concepts that are likely to be implemented as successful video games. During this course, the students will develop a complete presentation manual for a high level game that they will implement in semester 2.

Course Title: ***STORYBOARDS AND GAME CONCEPTS Level 2***

Code: ***SGC2***

Type: ***Game Construction, Theory, Compulsory***

Semester: ***3***

Hours: ***60***

Description:

This course teaches the student skills in developing and creating game concepts that are likely to be implemented as successful video games. During this course, the students will develop a complete presentation manual for a low level game that they will implement in semester 4.

Course Title: ***SUPERVISED GAME PRACTICUM***

Code: ***SGP***

Type: ***Practicum, Compulsory***

Semester: ***1, 2, 3, 4 (Compulsory)***

Description:

During this supervised class, students are expected to complete all assignments and reports assigned to them during the theory courses. As students become more proficient, they are required to design and implement, within a team environment, projects of a larger scale. While working on these projects, students can gain invaluable experience in team work, project and file management, and problem solving. These skills will prove invaluable in helping students make the transition to working in the real world. This practicum is a crucial part of the program; thus, it is scheduled everyday of the program.

Semester 1:

ECM_{SGP}
CE_{SGP}
OS_{SGP}
SGC1_{SGP}
HLP1-1_{SGP}

Semester 2:

PCG1_{SGP}
HLP1-2_{SGP}
LLP1_{SGP}
AA_{SGP}
HLP2_{SGP}

Semester 3:

PCG2_{SGP}
HLP3_{SGP}
SGC2_{SGP}
LLP2_{SGP}

Semester 4:

IMP_{SGP}

Schedule During Semesters 1-3 (Compulsory):

Monday to Friday

From: 17:00 - 19:00

Schedule During Semester 4 (Compulsory):

Monday to Thursday

From: 17:00 - 19:00

Course Title: **SUMMER WORKSHOP 1**

Code: **SW1**

Type: **Elective**

Summer between semester #2 and semester #3

Description:

During this period, the student is given access to the facility. This time is often used by the students to work on excercises and practice creating code.

Schedule:

Monday to Friday

From: 9:00 -17:00

Course Title: **SUMMER WORKSHOP 2**

Code: **SW2**

Type: **Elective**

Summer between Semester #4 and Graduation

Description:

During this period, the students are given more time to work on creating games and code.

Schedule:

Monday to Friday

From: 9:00 - 17:00

Section G3 Timetable:

Weekly Calendar for Semester 1:

	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
09-10	OpenLab					Closed
10-12	ECM	CE	OS	SGC1	HLP1-1	Open Lab
12-14	Open Lab					Open Lab
14-16	ECM	CE	OS	SGC1	HLP1-1	Open Lab
16-17	Open Lab					
17-19	ECM _{SGP}	CE _{SGP}	OS _{SGP}	SGC1 _{SGP}	HLP1-1 _{SGP}	

Weekly Calendar for Semester 2:

	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
09-10	OpenLab					Closed
10-12	PCG1	HLP1-2	LLP1	AA	HLP2	Open Lab
12-14	Open Lab					Open Lab
14-16	PCG1	HLP1-2	LLP1	AA	HLP2	Open Lab
16-17	Open Lab					
17-19	PCG1 _{SGP}	HLP1-2 _{SGP}	LLP1 _{SGP}	AA _{SGP}	HLP2 _{SGP}	

Weekly Calendar for Summer Workshop 1:

	Mon.	Tue.	Wed.	Thu.	Fri.
09-17	Open Lab				

Weekly Calendar for Semester 3:

	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
<i>09-10</i>	<i>Open Lab</i>					<i>Closed</i>
10-12	PCG2	HLP3	SGC2	LLP2	HLP3_{SGP} or LLP2_{SGP}	<i>Open Lab</i>
<i>12-14</i>	<i>Open Lab</i>					<i>Open Lab</i>
14-16	PCG2	HLP3	SGC2	LLP2	HLP3_{SGP} or LLP2_{SGP}	<i>Open Lab</i>
<i>16-17</i>	<i>Open Lab</i>					
17-19	PCG2_{SGP}	HLP3_{SGP}	SGC2_{SGP}	LLP2_{SGP}	HLP3_{SGP} or LLP2_{SGP}	

Weekly Calendar for Semester 4:

	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
<i>09-10</i>	<i>Open Lab</i>					<i>Closed</i>
10-12	Implementation (IMP)				<i>Open Lab</i>	
<i>12-14</i>	<i>Open Lab</i>					
14-16	Implementation (IMP)				<i>Open Lab</i>	
<i>16-17</i>	<i>Open Lab</i>					
17-19	IMP_{SGP}				<i>Open Lab</i>	

Weekly Calendar for Summer Workshop 2:

	Mon.	Tue.	Wed.	Thu.	Fri.
<i>09-17</i>	<i>Open Lab</i>				

Section G4 Training Hours:

(Note: The number of hours for each course may be less if the dates of the Canadian statutory holidays overlap with the dates of the classes.)

Courses Given in Semester 1:

Elements of Computer Math	(ECM)	60 hrs
Computer Environment	(CE)	60 hrs
Operating Systems	(OS)	60 hrs
High Level Programming Level 1	(HLP1-1)	60 hrs
Storyboards and Game Concept	(SGC1)	60 hrs
Supervised Game Practicum	(SGP)	150 hrs
Open Lab	(OL)	349 hrs
Totals for the semester:		
Class Time:		
<i>Theory</i>		300 hrs
<i>Supervised Game Practicum</i>		150 hrs
Open Lab		349 hrs
Total Usage of Lab		840 hrs

Courses Given in Semester 2:

Principles of Computer Graphics Lv. 1	(PCG1)	60 hrs
High Level Programming Level 1	(HLP1-2)	60 hrs
High Level Programming Level 2	(HLP2)	60 hrs
Low Level Programming Level 1	(LLP1)	60 hrs
Algorithm Analysis	(AA)	60 hrs
Supervised Game Practicum	(SGP)	150 hrs
Open Lab	(OL)	390 hrs
Totals for the semester:		
Class Time:		
<i>Theory</i>		300 hrs
<i>Supervised Game Practicum</i>		150 hrs
Open Lab		390 hrs
Total Usage of Lab		840 hrs

Summer Workshop 1:

Open Lab	(OL)	308 hrs
Totals for the semester:		
Open Lab		308 hrs
Total Usage of Lab		308 hrs

Courses Given in Semester 3:

Principles of Computer Graphics Lv. 2	(PCG2)	60 hrs
High Level Programming Level 3	(HLP3)	60 hrs
Low Level Programming Level 2	(LLP2)	60 hrs
Storyboards and Game Concept	(SGC2)	60 hrs
Supervised Game Practicum	(SGP)	210 hrs
Open Lab	(OL)	390 hrs

Totals for the semester:

Class Time:

<i>Theory</i>	240 hrs
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<i>Supervised Game Practicum</i>	210 hrs
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Open Lab	390 hrs
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Total Usage of Lab	840 hrs
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Semester 4:

Implementation	(IMP)	240 hrs
Supervised Game Practicum	(SGP)	120 hrs
Open Lab	(OL)	480 hrs

Totals for the semester:

Class Time:

<i>Theory</i>	240 hrs
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<i>Supervised Game Practicum</i>	120 hrs
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Open Lab	480 hrs
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Total Usage of Lab	840 hrs
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Summer Workshop 2:

Open Lab	(OL)	301 hrs
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Totals for the semester:

Open Lab	301 hrs
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Total Usage of Lab	301 hrs
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Total Hours in the Course:**Totals for the first year:**

Class Time:	
<i>Theory</i>	600 hrs
<i>Supervised Game Practicum</i>	300 hrs
Open Lab	1047 hrs
Total Usage of Lab	1947 hrs

Totals for the second year:

Class Time:	
<i>Theory</i>	480 hrs
<i>Supervised Game Practicum</i>	330 hrs
Open Lab	1171 hrs
Total Usage of Lab	1981 hrs

Totals for the Course:

Class Time:	
<i>Theory</i>	1080 hrs
<i>Supervised Game Practicum</i>	630 hrs
Subtotal (Class Time + Supervised Practice)	1710 hrs
Open Lab	2218 hrs
Total Usage of Lab	3928 hrs

The Art and Science of 3D Computer Animation Program

DigiPen Applied Computer Graphics School reserves the right to make changes to the curriculum without any prior notice.

Section A1

General Overview:

Program Name:

The Art & Science of 3D Computer Animation

Program Objective:

To offer a focused program that provides a balance between technology and art so that students can become well-rounded computer animators.

Prerequisites:

Computer animation is ultimately an artistic media and therefore, DigiPen is looking to accept students that have proven creative and artistic ability, particularly in the area of figure/character drawing. All applicants are required to submit some examples of their art work. Please note that as DigiPen does not assume any responsibility for portfolios received, it is advised that applicants only submit copies of their work (i.e. photocopies, photographs).

Whether a student has prior computer experience is not an important issue as the tools available to today's computer animators are very easy to learn. In fact, most of the students are animating with the computer within a few weeks of starting the program.

Other skills that DigiPen takes into consideration would be in the areas of:

- Graphic design
- Film and/or video production
- Photography
- Acting/theatre experience
- Creative writing

Students must have completed Grade 12 or equivalent. Those students who do not have a computer background may be conditionally accepted if they complete the two (2) week Introduction to the PC and DOS course offered by DigiPen prior to the start of the animation program. For more information about this course, please contact the school. In addition, students accepted to the program who do not have a TOEFL score of at least 500 *must* successfully complete the ESL course as a *compulsory* requirement to continue on in the program.

All applicants are also required to write an entrance exam that assesses the following:

- Basic computer skills
- English language skills
- Drawing skills

Success in the program does require a commitment by the student to spend a *minimum* of 40 hours per week at school for the entire program. Only those applicants who can commit this amount of time should consider joining the program. Performance and professionalism are expected to be maintained at all times. Students not meeting these guidelines may be asked to withdraw from the program.

Length of Program:

The program is 75 weeks in length, which is broken up into four (4) semesters of 15 weeks each and a summer production workshop.

Tuition:

The First year (Semester 1, Semester 2):

For students from Canada:

\$16,000.00* in Canadian funds or the equivalent in U.S. funds (tax is not included).

For students from other countries:

\$16,000.00* in U.S. funds (tax is not included).

ESL course (students whose TOEFL score is below 500, this course is compulsory and will be integrated in the two-year 3D animation program)

\$4,000 in U.S. funds (tax is not included)

The Second year (Semester 3, Semester 4):

For students from Canada:

\$16,000.00* in Canadian funds or the equivalent in U.S. funds (tax is not included).

For students from other countries:

\$16,000.00* in U.S. funds (tax is not included).

* The tuition fee is applied toward the semesters only, and there is no charge for the summer production workshop. These tuition fees may be changed after printing date. Please call the school for any updates on the tuition.

Scholarship:

As an incentive for students to excel within the program, DigiPen awards a **President's Scholarship** to the student who excels in the first year of the program. The scholarship will cover the student's cost of tuition for the second year. The selection of the student is determined by the Advisory Committee based primarily upon the professionalism and quality of the student's work.

Summary of the Program:

The mandate of DigiPen's 2-year 3D Animation Program is to instruct students on how to use existing 3D computer animation software and hardware to its full potential. This means more than teaching what functions a program can execute. Good animators must understand essential concepts such as production planning, story and storyboard development, motion analysis and timing, soundtrack design, as well as camera and lighting techniques. They must have the initiative to research related topics, problem solve, improvise, and be able to work both individually and in a team environment. All of this must be mastered while keeping abreast of the latest developments in this very demanding and constantly changing industry.

The curriculum of the 3D Animation Program consists of four (4) semesters and a summer production workshop. Students must successfully complete all semesters in order to graduate.

All deadlines are expected to be met for all projects and assignments. Students who miss a deadline will be penalized 10% for each calendar day following the deadline until the project or assignment is completed. Failure to complete a project or assignment will result in a complete review of a student's performance within the program. This review may result in the suspension or expulsion of the student. In addition, all student projects must receive written approval from DigiPen's instructors prior to commencement of a production.

Curriculum Breakdown:

SUMMER (May - August)

Course:

- ESL - English as a Second Language 330 hrs
(Compulsory for students with TOEFL score below 500)

SEMESTER 1 (15 weeks) - Foundation Training

Courses:

- CAP1 - Computer Animation Production - Level 1 120 hrs
- AF1 - Animation Fundamentals - Level 1 60 hrs
- SSD1 - Story & Storyboard Development 90 hrs
- CL1 - Composition & Lighting 60 hrs
- SD1 - Soundtrack Design 60 hrs
- PP1 - Production Planning 30 hrs
- VGP1 - Video Game Production Workshop 30 hrs

SEMESTER 2 (15 weeks) - Foundation Training/Production

Courses:

- AF2 - Animation Fundamentals - Level 2 60 hrs
- CGSO1 - Computer Graphics Systems Overview 60 hrs
- APM1 - Animation Production Meeting 30 hrs

Production:

- Personal Project

PRODUCTION WORKSHOP (15 weeks)

Courses:

- APM2 - Animation Production Meeting 30 hrs

Production:

- Group Client Project

SEMESTER 3 (15 weeks) - Advanced Training/Production

Courses:

- CAP2 - Computer Animation Production - Level 2 90 hrs
- PT1 - Post-Production Techniques 30 hrs

- AL1 - Advanced Lighting 30 hrs
- APM3 - Animation Production Meeting 30 hrs

Production:

- Personal Project

SEMESTER 4 (15 weeks) - Graduation Preparation/Production**Courses:**

- CAP3 - Computer Animation Production - Level 3 90 hrs
- BPIP1 - Business Planning & Industry Preparation 60 hrs
- APM4 - Animation Production Meeting 30 hrs

Production:

- Group Client Project

Section A2

Detailed Compulsory Course Outline:

Course Title: ***ENGLISH AS A SECOND LANGUAGE***

Code: ***ESL***

Semester: ***Summer Session, before Semester 1***

Hours: ***330***

Description:

The objective of this course is to provide ESL students with the English skills necessary to enroll and participate actively in DigiPen's Two-year courses. This course was designed to provide an English supplement to DigiPen's courses. Students whose TOEFL scores below 500 must successfully pass the ESL course to continue on in the program.

Course Title: ***COMPUTER ANIMATION PRODUCTION***

Code: ***CAP1, CAP2, CAP3***

Semester: ***1, 3, 4***

Hours: ***CAP1 - 120, CAP2 - 90, CAP3 - 90***

Description:

These courses deal with all of the basic theories and techniques utilized in the production of computer animation. In *CAP1*, students are introduced to a PC based 3D animation package, which they will use as their primary production tool throughout the program.

CAP2 and *CAP3* build on the fundamentals taught during the first year and introduce students to other commercially available animation packages.

Course: **ANIMATION FUNDAMENTALS LEVEL 1 & 2**
 Code: **AF1 & AF2**
 Semester: **1, 2**
 Hours: **AF1 - 60 , AF2 - 60**
 Description:

Being a good computer animator encompasses more than just knowing how a software package works. Key issues such as character design and timing techniques are the same whether we are dealing with computer animation, claymation, or cel animation. By studying some of the production techniques utilized by cel animators, students are given the opportunity to gain a solid understanding of animation principles.

Course Title: **STORY AND STORYBOARD DEVELOPMENT**
 Code: **SSD1**
 Semester: **1**
 Hours: **60**
 Description:

The underlying purpose of any animation is to tell a story, therefore it is important that an animator understand what the elements of a good story are. Students are taught these elements through discussion and analysis of various films and animations.

Before work on an animation begins, it is usually desirable to plan the production on paper, especially through the use of storyboards. Storyboards ensure that everyone understands what the final goal of an animation is and help to provide an animation team with a sense of how to produce the animation efficiently. Therefore, students will be presented with the basic techniques for producing effective storyboards as well as further developing their drawing skills.

Course Title: **COMPOSITION & LIGHTING**

Code: **CL1**

Semester: **1**

Hours: **60**

Description:

Like a real director of photography, computer animators must have a solid understanding of how to utilize camera composition and lighting techniques to enhance the visual impact of the "story" that is being told. Appropriate camera composition and motion help to reveal the action while lighting can set the mood and highlight a desired focus of a scene.

Course: **SOUNDTRACK DESIGN**

Code: **SD1**

Semester: **1**

Hours: **60**

Description:

Despite all of the work that is needed to create the imagery of an animation, the production would be incomplete without a soundtrack. It is, therefore, extremely important for animators to appreciate the design of the soundtrack as well as the animation. Students are not expected to become musicians themselves but they must be able to communicate their needs to a musician.

Course: ***PRODUCTION PLANNING***
Code: ***PP1***
Semester: ***1***
Hours: ***30***
Description:

Solid preparation of a production can be the determining factor when it comes to completing an animation on time and on budget. Production agreements, storyboards, production timelines and research are just some of the items that need to be resolved before an animator should sit before a computer terminal.

Course: ***VIDEO GAME PRODUCTION***
Code: ***VGP1***
Semester: ***1***
Hours: ***30***
Description:

Many of today's computer animators are finding jobs as video game artists. This course provides students with an overview of the production process for creating video games. In addition, the animation students begin working with the video game programming students to produce graphics for the video games being created by the video game students. This cooperation between the two groups of students continues throughout the entire program and provides an added "feature" to the animation students' portfolio.

Course: **COMPUTER GRAPHICS SYSTEMS OVERVIEW**
Code: **CGS01**
Semester: **2**
Hours: **60**
Description:

In an industry that is constantly changing, computer animators must be aware of recent developments with regards to hardware and software. This course looks at the variety of computer platforms, operating systems, software applications, and much of the terminology associated with the business.

Course: **POST-PRODUCTION TECHNIQUES**
Code: **PT1**
Semester: **3**
Hours: **30**
Description:

As the film/video industry continues to utilize computer graphics for post-production, it is important that animators have a good understanding of the issues of this field. This course provides students with an introduction to topics such as non-linear editing, image processing, motion tracking and digital compositing.

Course: ***ADVANCED LIGHTING***

Code: ***ALI***

Semester: ***3***

Hours: ***30***

Description:

Building on the material taught in *CLI - Composition & Lighting* course, students continue the study of effective lighting techniques. One of the projects will be for students to design and execute a lighting plan for an actual set.

Course: ***BUSINESS PLANNING & INDUSTRY PREPARATION***

Code: ***BPIP1***

Semester: ***4***

Hours: ***30***

Description:

Although many graduates hope to find work with established animation companies, there are also many "freelance" opportunities. The intent of this course is to prepare students for this possibility by providing teaching basic concepts of marketing, administration, legalities, and business planning. In addition, several industry guest speakers will be brought in to share their experiences with the students.

Course: **ANIMATION PROJECTS**
 Code: *AP1, AP2, AP3, AP4*
 Semester: *2, SW, 3, 4*
 Hours: *Minimum 600 hours per project*
 Description:

The underlying goal for students is to produce a comprehensive animation portfolio that would be used to find employment. Therefore, DigiPen's animation program is extremely production oriented.

In *Semester 2*, students produce their first complete animation that is between thirty seconds to one minute. Students are required to attend weekly production meetings with the instructors to monitor and assist students as they produce their projects.

For each production that the students produce during the program, they must provide the following:

- Production documentation (i.e. script, schedules, storyboards) to be submitted and approved prior to the commencement of production.
- Three (3) still images from the animation.
- Upon completion of an animation, students will submit a written report of the different stages of the project as well as present the completed animation to the class during a production meeting.

During the *Summer Workshop*, students begin working within a team (usually 3-4 students) in one of the following situations:

- They may work towards producing an animation of their own concept.
- They may work towards producing an animation for a "DigiPen-assigned Client". This option is a very unique experience where students must deal with all of the issues of working with an actual client. All of "DigiPen's-assigned Clients" are non-profit organizations.

In addition to the potential wide exposure that these projects may obtain, it is also of great value to every student when putting his/her resume together. Only those students who have demonstrated their ability and professionalism are given this privilege. As before, students will be required to attend weekly production meetings with the instructors to monitor and assist students as they produce their projects.

Semester 3 provides students with another opportunity to produce another "Personal" project on their own and in *Semester 4* students create another "Group" project.

Students are responsible for the soundtrack design of their animations. They can elect either to utilize their own musician at their own cost or they may access one of the musicians that DigiPen can provide.

Section A-3 Timetable:

Weekly Calendar for Semester 1:

	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
09-9:30	OpenLab					Open Lab 10:00-4:00
9:30-11:30	CAP1	CAP1	CAP1	CAP1	PP	
11:30-12:30	Lunch					
12:30-2:30	SD1	SSD1	CL	SSD1	CL	
2:30-3:00	Open Lab					
3:00-5:00	AF1	SSD1	AF1	VGP1	SD1	

Weekly Calendar for Semester 2:

	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
09-9:30	OpenLab					OpenLab 10:00-4:00
9:30-11:30	OpenLab	CGSO	OpenLab	CGSO	APM1	
11:30-12:30	Lunch					
12:30-2:30	OpenLab					
2:30-3:00	Open Lab					
3:00-5:00	AF2	OpenLab	AF2	OpenLab	OpenLab	

Weekly Calendar for Semester 3:

	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
09-9:30	OpenLab					Open Lab 10:00-4:00
9:30-11:30	CAP2	CAP2	PT1	CAP2	PP	
11:30-12:30	Lunch					
12:30-2:30	OpenLab					
2:30-3:00	Open Lab					
3:00-5:00	OpenLab	OpenLab	AL1	OpenLab	APM3	

Weekly Calendar for Semester 4:

	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
09-9:30	OpenLab					Open Lab 10:00-4:00
9:30-11:30	CAP3	OpenLab	CAP3	BPIP1	CAP3	
11:30-12:30	Lunch					
12:30-2:30	OpenLab	OpenLab	OpenLab	OpenLab	APM4	
2:30-3:00	Open Lab					
3:00-5:00	OpenLab					

Section A4 Training Hours:

(Note: The number of hours for each course may be less if the dates of the Canadian statutory holidays overlap with the dates of the classes.)

Courses Given in Semester 1:

Computer Animation Production	(CAP)	120 hrs
Animation Fundamentals Level 1	(AF1)	60 hrs
Story & Storyboard Development	(SSD1)	90 hrs
Camera Composition & Lighting	(CL1)	60 hrs
Production Planning	(PP1)	30 hrs
Video Game Production Workshop	(VGP1)	30 hrs
Soundtrack Design	(SD1)	60 hrs
Supervised Animation Practicum	(SAP)	225 hrs

Totals for the semester:

Class Time	450 hrs
Supervised Animation Practicum	225 hrs
Total Usage of Lab	675 hrs

Courses Given in Semester 2:

Animation Production Meeting	(APM1)	30 hrs
Animation Fundamentals Level 2	(AF2)	60 hrs
Computer Graphics Systems Overview	(CGSO1)	60 hrs
Supervised Animation Practicum	(SAP)	555 hrs

Totals for the semester:

Class Time	150 hrs
Supervised Animation Practicum	555 hrs
Total Usage of Lab	705 hrs

Summer Production Workshop - Elective

Animation Project	(AP2)	30 hrs
Supervised Animation Practicum	(SAP)	525 hrs

Totals for the semester:

Class Time	30 hrs
Supervised Animation Practicum	525 hrs
Total Usage of Lab	555 hrs

Courses Given in Semester 3:

Computer Animation Production Level 2	(CAP2)	90 hrs
Post Production Techniques	(PT1)	30 hrs
Advanced Lighting	(AL1)	30 hrs
Animation Production Meeting	(APM3)	30 hrs
Supervised Animation Practicum	(SAP)	547 hrs

Totals for the semester:

Class Time	180 hrs
Supervised Animation Practicum	547 hrs
Total Usage of Lab	727 hrs

Courses Given in Semester 4:

Animation Production Meeting	(APM4)	30 hrs
Business Planning and Industry Preparation	(BPIP1)	60 hrs
Computer Animation Production Level 3	(CAP3)	90 hrs
Supervised Animation Practicum	(SAP)	555 hrs

Totals for the semester:

Class Time	180 hrs
Supervised Animation Practicum	555 hrs
Total Usage of Lab	735hrs

Total Hours in the Course:**Totals for the first year:**

Class Time	600 hrs
Supervised Animation Practicum	780 hrs
Total Usage of Lab	1380 hrs

Totals for the second year:

Class Time	360 hrs
Supervised Animation Practicum	1102 hrs
Total Usage of Lab	1462 hrs

Totals for the Course:

Class Time	960 hrs
Supervised Animation Practicum	1882 hrs
Summer Production Workshop	555 hrs
Total Usage of Lab	3397 hrs

